



Matrix metalloproteinases, tissue inhibitors of metalloproteinases, and the ocular surface microbiome in normal brachycephalic dogs

Study Purpose: This purpose of this study is to compare various factors which may influence development and healing of surface ocular disease in healthy dogs of various skull conformation types. Brachycephalic dogs have distinctive skull conformation resulting in short flat faces and include breeds such as Boston Terriers, English and French Bulldogs, Shih Tzus, and Pugs. Dogs with brachycephalic skull conformation are overrepresented in cases of corneal ulceration and are more prone to develop infections on the surface of the eye that require intensive treatment and even surgery. Every dog produces their own proteins that exist in the tear film on the surface of the eye. These proteins maintain the health of the cornea and are produced in larger or smaller quantities when injuries occur. The surface of the eye also has a microbiome, or population of bacteria which may help prevent abnormal growth of pathogenic bacteria. All these factors contribute to health of the ocular surface. Our goal is to compare the levels of naturally occurring proteins in the tears and bacterial populations on the surface of the eye in healthy brachycephalic and non-brachycephalic dogs.

Explanation: If you agree to be in this study, your dog will undergo a complete ophthalmic examination of both eyes by a veterinary ophthalmologist. If any signs of active surface ocular disease or glaucoma are found during examination, you will be notified, and your dog will be excluded from the study. Following examination, tear fluid will be collected using Schirmer tear test strips. Then a drop of a topical anesthetic drug (numbing drop) will be applied to each of your dog's eyes, and a sample will be collected from the conjunctiva of both eyes with a sterile swab. Your study participation ends once the ocular samples have been collected. There is no follow up required.

Investigators:

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Eligibility:

- Your dog must be at least 12 months of age. Any breed or sex of dog may participate.
- Your dog must not have received oral antibiotics within the past 4 weeks.
- Your dog must not have been treated with any topical ophthalmic antibiotic, steroid, or nonsteroidal anti-inflammatory drugs within the past 4 weeks.
- You must not identify as a healthcare worker or have routine physical contact with human or veterinary patients in a clinical setting.

Risks: We do not anticipate any problems in obtaining samples from your pet. Tear fluid sample collection and conjunctival swabs will be performed by a trained individual.

Fees for Services: There is no additional cost for you to participate in this study once your dog has been enrolled, and there is no charge for the ophthalmic exam performed at the time of enrollment.

Owner Responsibilities: Ophthalmic examination and all sample collection will be performed on one day during your pet's visit to the Veterinary Health Center at Kansas State University. You will not be required to administer any medications or treatments for the purposes of this study.

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